

CLAIMS

What is claimed is:

1. A wireless transmit/receive unit (WTRU) for communication in a wireless mobile network, at least one local wireless network, and for peer to peer wireless communications with other WTRUs, comprising:

selectively operable transceiver components that are configured for wireless mobile network communications with mobile network base stations, wireless local network communications with local network base stations, and wireless peer to peer communications with other WTRUs; and

a transceiver controller configured to selectively control wireless communications with mobile network base stations based on communication signals received from local network base stations or other WTRUs such that:

a wireless mobile network communication is switched to a local network base station or other WTRU when wireless communication signals received from such local network base station or other WTRU indicates a first predetermined quality of service level available therefrom, and

a wireless mobile network communication is sought to be established when a wireless communication with a local network base station or other WTRU indicates that at least a second predetermined quality of service level is no longer available therefrom and no communication signals are received from a local network base station or other WTRU that indicate availability of the first predetermined quality of service level.

2. The invention of claim 1, wherein the transceiver controller is configured to selectively control wireless communications with local network base stations based on communication signals received from other WTRUs such that:

a wireless local network communication is switched to another WTRU when communication signals received from such other WTRU indicates a third predetermined quality of service level is available therefrom, and

a wireless local network communication is sought to be established when a communication with another WTRU indicates that at least a fourth predetermined quality of service level is no longer available therefrom and no communication signals are received from other WTRUs that indicate availability of the third predetermined quality of service level.

3. The invention of claim 2 wherein the first predetermined quality of service level used by the transceiver controller is no greater than the third predetermined quality of service level used by the transceiver controller and the second predetermined quality of service level used by the transceiver controller is no greater than the fourth predetermined quality of service level used by the transceiver controller.

4. The invention of claim 1 wherein the transceiver components include a wireless local area network (WLAN) modem for the peer to peer communications with other WTRUs.

5. The invention of claim 1 wherein the WTRU is a mobile unit and the transceiver controller is configured to use a pre-determined quality of service level based on a quality of radio signal criteria in combination with a relative cost criteria, a power consumption criteria and/or an estimate of the geographic location of the mobile unit.

6. The invention of claim 5 further comprising a Global Positioning System (GPS) for generating the estimate of the geographic location of the mobile unit.

7. A method of communication using a wireless transmit/receive unit (WTRU) within multiple networks including a wireless mobile network, at least one

local wireless network, and ad hoc peer to peer wireless networks with other WTRUs, comprising:

providing WTRUs having selectively operable transceiver components that are configured for wireless mobile network communications with mobile network base stations, wireless local network communications with local network base stations, and ad hoc peer to peer wireless network communications with other WTRUs; and

selectively controlling wireless communications of the WTRUs with mobile network base stations based on communication signals received from local network base stations or other WTRUs such that:

a wireless mobile network communication is switched to a local network base station or other WTRU when wireless communication signals received from such local network base station or other WTRU indicates a first predetermined quality of service level available therefrom, and

a wireless mobile network communication is sought to be established when a wireless communication with a local network base station or other WTRU indicates that at least a second predetermined quality of service level is no longer available therefrom and no communication signals are received from a local network base station or other WTRU that indicate availability of the first predetermined quality of service level.

8. The method of claim 7 wherein the wireless communications with local network base stations is selectively control based on communication signals received from other WTRUs such that:

a wireless local network communication is switched to another WTRU when communication signals received from such other WTRU indicates a third predetermined quality of service level is available therefrom, and

a wireless local network communication is sought to be established when a communication with another WTRU indicates that at least a fourth

predetermined quality of service level is no longer available therefrom and no communication signals are received from other WTRUs that indicate availability of the third predetermined quality of service level.

9. The method of claim 8 wherein the first predetermined quality of service level used is no greater than the third predetermined quality of service level used and the second predetermined quality of service level used is no greater than the fourth predetermined quality of service level used.

10. The method of claim 7 wherein WTRUs are provided with transceiver components that include a wireless local area network (WLAN) modem for peer to peer communications with other WTRUs.

11. The method of claim 7 wherein the pre-determined quality of service levels that are used are based on a quality of radio signal criteria in combination with a relative cost criteria, a power consumption criteria and/or an estimate of the geographic location of the mobile unit.

12. The method of claim 11 further comprising using a Global Positioning System (GPS) for generating the estimate of the geographic location of the WTRU.

13. A method of communication using a wireless transmit/receive unit (WTRU) within multiple networks including a wireless mobile network, at least one local wireless network, and ad hoc peer to peer wireless networks with other WTRUs, comprising:

providing WTRUs having selectively operable transceiver components that are configured for wireless mobile network communications with mobile network base stations, wireless local network communications with local network base stations, and ad hoc peer to peer wireless network communications with other WTRUs; and

conducting an informational communication between a first WTRU and a target WTRU with which a direct wireless communication cannot then be established by:

establishing a wireless communication between the first WTRU and a second WTRU when wireless communication signals received from such second WTRU indicates a first predetermined quality of service level available therefrom, and

relaying the informational communication from the first WTRU via the second WTRU to a mobile network base station, a local network base station, or another WTRU when wireless communication signals received from such mobile network base station, local network base station, or other WTRU indicates a first predetermined quality of service level available therefrom to the second WTRU.

14. The method of claim 13 wherein the conducting an informational communication between a first WTRU and a target WTRU includes establishing a wireless communication between the target WTRU and the second WTRU when wireless communication signals received from such the second WTRU indicates a first predetermined quality of service level available therefrom to the target WTRU.

15. The method of claim 13 wherein the conducting an informational communication between a first WTRU and a target WTRU includes relaying the informational communication via the second WTRU to a mobile network base station with which the second WTRU has established a wireless mobile network communication, further comprising:

selectively controlling wireless communication of the second WTRU with the mobile network base station based on communication signals received from local network base stations or other WTRUs such that:

the wireless mobile network communication is switched to a local network base station or other WTRU when wireless communication signals received from

such local network base station or other WTRU indicates a first predetermined quality of service level available therefrom.

16. The method of claim 15 further comprising relocating the target WTRU relative to the second WTRU so that wireless communication signals received between the second WTRU and the target WTRU indicate a first predetermined quality of service level available therebetween whereby the second WTRU's wireless mobile network communication is switched to the target WTRU so that the informational communication is continued as an ad hoc wireless network communication between the first WTRU and the target WTRU via the second WTRU.

17. The method of claim 13 wherein the conducting an informational communication between a first WTRU and a target WTRU further includes:

establishing a wireless communication between the target WTRU and the mobile network base station, local network base station, or other WTRU to which the informational communication is relayed from the second WTRU when wireless communication signals received from such mobile network base station, local network base station, or other WTRU indicates a first predetermined quality of service level available therefrom to the target WTRU.

18. The method of claim 17 wherein the conducting an informational communication between a first WTRU and a target WTRU includes relaying the informational communication via the second WTRU to a mobile network base station with which the target WTRU has established a wireless mobile network communication, further comprising:

selectively controlling wireless communication of the target WTRU with the mobile network base station based on communication signals received from local network base stations or other WTRUs such that:

the wireless mobile network communication is switched to a local network base station or other WTRU when wireless communication signals received from such local network base station or other WTRU indicates a first predetermined quality of service level available therefrom.

19. The method of claim 18 further comprising relocating the first WTRU relative to the target WTRU so that wireless communication signals received between the first WTRU and the target WTRU indicate a first predetermined quality of service level available therebetween whereby the target WTRU's wireless mobile network communication is switched to the first WTRU so that the informational communication is continued as a direct wireless communication between the first WTRU and the target WTRU.

20. The method of claim 13 wherein the relaying the informational communication from the first WTRU via the second WTRU to a mobile network base station, a local network base station, or another WTRU when wireless communication signals received from such mobile network base station, local network base station, or other WTRU indicates a first predetermined quality of service level available there from to the second WTRU includes the communication of a second informational communication conducted by the second WTRU via such mobile network base station, local network base station, or other WTRU.